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AOYAMA & PARTNERS

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**IN THE UNITED STATES PATENT & TRADEMARK OFFICE**

IN RE APPLICATION OF :

AKIRA IGARASHI ET AL.

: EXAMINER: LANGEL, WAYNE A

SERIAL NO: 09/720,262 :

FILED: FEBRUARY 6, 2001

: GROUP ART UNIT: 1754

FOR: CATALYSTS FOR WATER GAS :  
SHIFT REACTION, METHOD FOR  
REMOVING CARBON MONOXIDE  
IN HYDROGEN GAS AND FUEL CELL  
GENERATION SYSTEM

**DECLARATION UNDER 37 C.F.R. § 1.132**

ASSISTANT COMMISSIONER FOR PATENTS  
WASHINGTON, D.C. 20231

SIR:

Now comes Manabu Mizobuchi who deposes and states:

1. That I am a graduate of Graduate School of Engineering Science, Osaka University and received my master degree in the year 1986.
2. That I have been employed by MATSUSHITA ELECTRIC WORKS, LTD. for 17 years as an engineer in the fields of catalyst and fuel cell technologies.
3. That the following experiments were carried out by me or under my direct supervision and control.

#### 4. Experiments

The experiments were carried out as follows:

##### 4.1 Preparation of Catalysts

A zirconia carrier was prepared as explained in Example 1 of the specification, and then platinum was supported on the carrier to produce the catalyst Pt(3)/ZrO<sub>2</sub>. The amount of platinum was 3.0 % by weight.

Example 17 of the specification was carried out except that platinum was not supported so as to produce the catalyst Re(3)/ZrO<sub>2</sub> which carries only rhenium. The amount of rhenium was 3.0 % by weight.

Example 17 in the specification was carried out so as to produce the catalyst Pt(3)-Re(2)/ZrO<sub>2</sub>. The amount of platinum was 3.0 % by weight, and the amount of rhenium was 2.0 % by weight.

##### 4.2 Evaluation of Catalysts

Evaluation of CO removing performance of each of the above catalysts was carried out in the same manner as explained in Example 1 of the specification, except that a ratio of H<sub>2</sub>O/CO was 1.5, SV was 9500 (1/hr), and the reaction temperatures were 175 °C, 200 °C, 225 °C and 250 °C.

#### 5. Results

The attached Figure which is incorporated into this Declaration shows that the catalyst having platinum and rhenium works significantly better for the conversion of CO than each of the catalysts having only platinum or only rhenium. Further, the superior effect of the catalyst according to the present invention having both platinum and rhenium is shown over a broad

temperature range from 175 to 250°C. This results are not disclosed or suggested by cited the references.

6. The undersigned petitioner declares further that all statements made herein of his own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of this application or any patent issuing thereon.

7. Further deponent saith not.

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Signature

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Date

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